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Synthesis and Secretion of Nerve Growth Factor by Mouse Astroglial Cells in Culture.

SHOEI FURUKAWA, YOSHIKO FURUKAWA, EIJIRO SATOYOSHI and KYOZO HAYASHI*

Astroglial cells cultured from the mouse brain have been found to synthesize and secrete a material (s) with nerve growth factor-like immunoreactivity (NGF-LI) into their culture medium. A material (s) with NGF-LI showed identical properties to those of βNGF purified from the mouse submaxillary gland in immunoreactivity, molecular weight, isoelectric point, and neurite outgrowth stimulatory activity. These results indicate that astroglial cells cultured from mouse brain are able to synthesize and secrete βNGF in culture. It is of great interest to study for understanding the functions of NGF in the brain.

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Human Breast Cancer Cells Synthesize and Secrete an EGF-Like Immunoreactive Factor in Culturc.

KAZUTOSHI MORI, MASAYUKI KUROBE, SHOEI FURUKAWA, KANJI KUBO, and KYOZO HAYASHI*

A human breast cancer cell line, strain MCF-7, in culture synthesized and secreted a large amount of a polypeptide (designated as MCF-7 EGF) immunologically related to human epidermal growth factor (hEGF). The molecular weight of MCF-7 EGF estimated by gel filtration was similar to that of hEGF from human urine. On isoelectric focusing analysis, MCF-7 EGF gave a major peak at pH 4.6 and a minor peak at pH 5.0. In our enzyme immunoassay system, however, the dose-response curve of MCF-7 EGF did not show good parallelism with that of standard hEGF. From these results, it is suggested that MCF-7 cells synthesize and secrete a polypeptide immunologically related to hEGF into the culture medium.

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Development of a Sensitive Enzyme Immunoassay for Human Epidermal Growth Factor (Urogastrone).

MASAYUKI KUROBE, NORIAKI TOKIDA, SHOEI FURUKAWA, EIJI ISHIKAWA and KYOZO HAYASHI*

A sensitive two-site enzyme immunoassay (EIA) for human epidermal growth factor (hEGF) was developed, based on the sandwiching of an antigen between anti-hEGF IgG-coated polystyrene beads and anti-hEGF Fab'-linked peroxidase complex (horseradish peroxidase, EC. 1.11.1.7). This meshod has four advantages : (a) the anti-hEGF Fab'-linked peroxidase complex is more stable than ^{125}I-labelled antibody ; (b) the procedure is simple and rapid compared to bioassay ; (c) its discriminatory sensitivity is as low as 0.1 pg/assay tube ; and (d) serial dilution curves of unextracted human serum and urine samples all paralleled that of standard hEGF.